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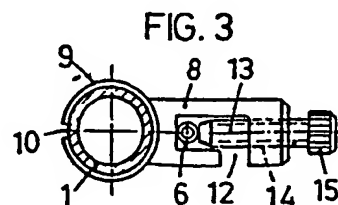
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54 Clamp for regulating the flow of a liquid.

57 A liquid flow regulating clamp, characterised essentially in that it comprises a solid support body (8), provided at the side thereof with a recess (12) for allowing insertion of the flow conduit tube (6) for the liquid to be controlled and the retention thereof in one end of the recess (12), by the termination of a threaded stem (13) engaged in one end of the holding body (8), while the other end is fixedly attached to a prehensile member advantageously formed by an incomplete cylindrical member (9) having resilient walls for engagement with a vertical support member (1). The clamp guarantees gentle, adjusted control of the drop rate and complete immobilisation of the infusion equipment.



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CLAMP FOR REGULATING THE FLOW OF A LIQUID

This patent relates to a clamp for regulating the flow of a liquid through a flexible conduit, it being particularly, although not exclusively, used for controlling medicinal liquids.

Therapy by infusion, generally intravenous, of liquids of various natures, such as sera having different components, blood plasma or the like, etc., to patients requiring such measures is a regular medical practice.

The known infusion equipment, generally of the so-called disposable type, basically comprises a flexible liquid flow conduit having at one end a cone for insertion of the injection needle and a transparent dripper device at the other end, allowing the drop-per-minute rate to be observed and controlled. This dripper device is sharpened at the end thereof to facilitate perforation of the plug of the bag or bottle containing the liquid to be perfused. Under the dripper device there is inserted an adjustable throttle device, usually providing uncertain results with respect to the exact metering of the liquid and ease of adjustment.

The above mentioned infusion equipment is situated beside the hospitalised patient, with the bottle hanging from a support and extended by a conduit to the patient's body. Movements of the patient's arm, possible contacts by third persons with the conduit, handling of the flow throttle by the medical personnel to adjust the flow rate and the swinging motion of the bottle itself all cause oscillatory movements of the whole structure, which is subjected to knocks unnecessarily upsetting the drop per minute rate. This is extremely important, if it is considered that the perfusion liquids generally contain medicinal drugs such as antibiotics, heart tonics, diuretics, cortisones and others, which require to be metered as accurately and regularly as possible.

The regulating clamp of this application removes the aforesaid drawbacks and provides functional advantages guaranteeing, on the one hand, gentle, adjusted control of the drop rate and, on the other, complete immobilisation of the infusion equipment in the part thereof extending from the bottle or container of the liquid to be perfused to the lower portion to the dripper device, which normally prevents any knocks or movement in the said length of the conduit and of the infusion equipment and the resulting upsetting of the drip rate.

The regulating clamp of the present application comprises basically a holding body of an appropriate shape and size, being provided at one end thereof with a regulating screw mechanism, in the midportion thereof with a lateral opening for receiving and housing the liquid flow conduit and at the other end thereof with a double resilient expansion, to serve as a prehensile grip for attachment to the vertical support of the infusion equipment.

To facilitate the explanation, there are attached to the specification drawings which as a non-limitating example show one embodiment of a flow regulating clamp for liquids, according to the principles stated in the claims.

In the drawings:

Figure 1 illustrates a physiological liquid transfusion equipment, with the outlet conduit towards a patient's body and being provided with a regulating clamp according to the invention;

Figure 2 is a side view of a detail of the new regulating device, which is illustrated in plan view in Figure 3 and in side elevation in Figures 4 and 5.

The parts designated with the numbers in the drawings correspond to the parts listed hereinafter.

The equipment for administration of physiological liquids to the human body comprises a support 1 having a base 2 and an arm 3 for holding the bottle 4 containing the liquid to be administered, associated with a dripper device connected at 5 to the conduit 6, the other end of which is provided with a cone 7 for connection to the injection needle for the immediate administration of the liquid to a patient's body.

The device being described comprises as outstanding feature a central body 8 advantageously having a cylindrical shape, one of the ends of which is extended by an also tubular cylindrical body 9 defining two semi-cylindrical wings which will be applied as a prehensile grip to the support 1, of varying diameter, of the equipment. The confronting edges of the extensions, which define a separable area 10, have at one end the rounded and divergent edges 11, to facilitate engagement of the device with the support 1.

On the middle side portion thereof, the body 8 is provided with an L-shaped recess 12 for receiving sideways and locating in the end of the L the conduit 6, which will be retained in the body 8 by the stud 13 provided with a fine pitch thread mating with the thread 14 in the axial bore of the body 8 at the end thereof. The head 15 of the stem, advantageously knurled on the side surface thereof, will facilitate the holding and operation of said stem and the consequent retention of the conduit 6.

On continuing to rotate the control or head 15, the flexible tube forming the conduit 6 is flattened to a greater or lesser extent and, thereby, an effective adjustment of the passage for the liquid is provided. As described, it is understood that the part of the conduit 6 comprised between the clamp 8 and the bottle 4 will be held immobile, in spite of the lower portion 16 of the conduit being affected by oscillations or other more or

less sharp movements made by the patient or other circumstances. This would not affect the integrity of the assembly and the equipment will be always in conditions to operate troublefree. Likewise, the control of the flow through the conduit 6 will be very accurate by way of the ~~above-described screw device, and any adjustment of the~~ drop rate being required may be obtained. A further advantage of the device is the possibility of inserting and removing the conduit 6 into and from the body 8 through the side of the latter in any point thereof.

This feature is important, since it provides a greater ease for the assembly of infusion equipment, preventing what is a necessary step in the known equipment, i.e. the prior insertion of the conduit through the flow regulator, before connecting the tube to the dripper device and with the needle holder cone.

All that does not affect, alter, change or modify the essence of the clamp described, will be variable for the purposes hereof.

C L A I M S

1.- A liquid flow regulating clamp, characterised essentially in that it comprises a solid support body, provided at the side thereof with a recess for allowing ~~insertion of the~~ flow conduit tube for the liquid to be controlled and the retention thereof in one end of the recess, by the termination of a threaded stem engaged in one end of the holding body, while the other end is fixedly attached to a prehensile member advantageously formed by an incomplete cylindrical member having resilient walls for engagement with a vertical support member.

2.- The liquid flow regulating clamp of claim 1, characterised in that the resilient cylindrical member extending from the conduit retaining support is provided at the side thereof removed from the support with a vertical opening, one of the ends whereof at least is provided with a divergent shape, facilitating its attachment to the vertical support of the unit.

FIG. 1

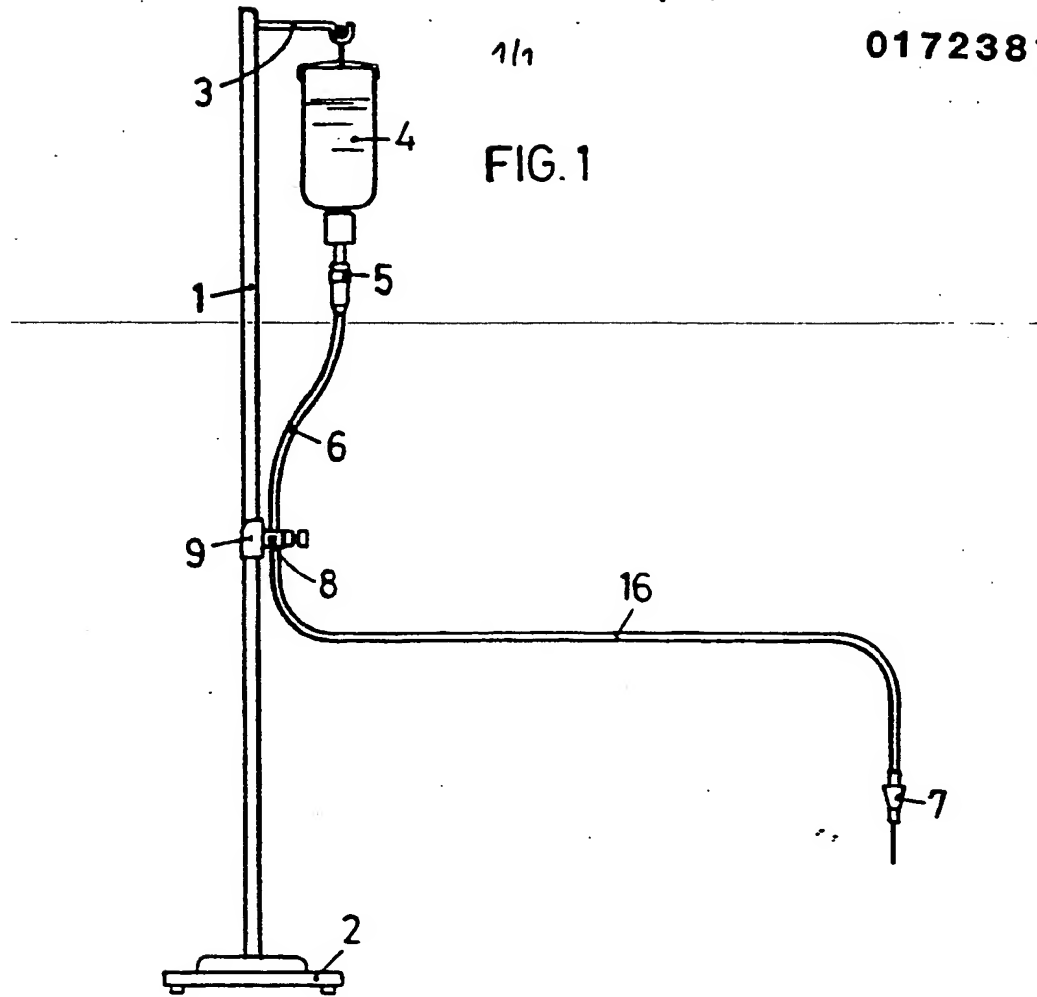


FIG. 4

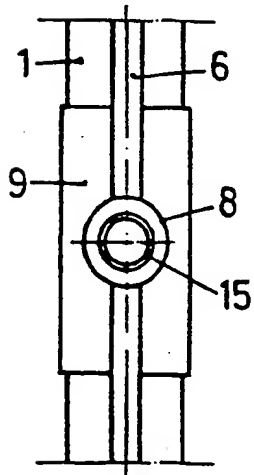


FIG. 2

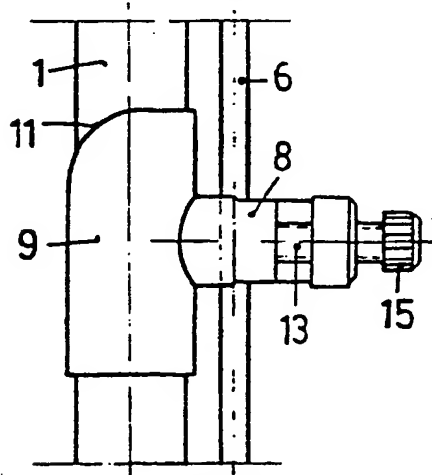


FIG. 5

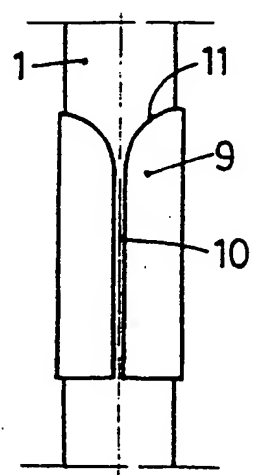
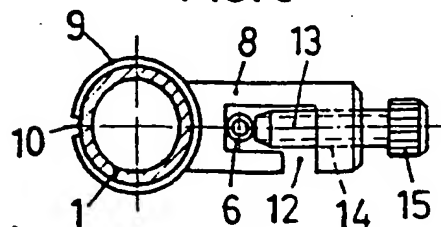


FIG. 3





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 04 00 8476

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IntCl.7)
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Y	* column 3, line 65 - column 5, line 43; figures 1-3 *	2,14-30	
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	* column 2, line 33 - column 3, line 60 *		
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	* page 3, line 1 - page 4, line 10; figures 1-3 *		
			TECHNICAL FIELDS SEARCHED (IntCl.7)
			G05D F16K A61M
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 18 July 2005	Examiner Henrikson, O
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03/82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 04 00 8476

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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18-07-2005

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